

CLAIMS

The invention is claimed as follows:

1. An anode, comprising:
an anode current collector having a projection; and
5 an anode active material layer being disposed on the anode current collector, and being alloyed with the anode current collector in at least a portion of an interface with the anode current collector, and including at least one kind selected from the group consisting of silicon and silicon compounds.
- 10 2. An anode, comprising:
an anode current collector having a projection; and
an anode active material layer being formed on the anode current collector through at least one method selected from the group consisting of a vapor deposition method, a liquid-phase deposition method and a sintering method, and including at
15 least one material selected from the group consisting of silicon (Si) and silicon compounds.
3. The anode according to claim 2, wherein
the anode active material layer is alloyed with the anode current collector in at
20 least a portion of an interface with the anode current collector.
4. The anode according to claim 2, wherein
the anode current collector is formed through forming a projection in a particle
shape on a substrate.
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5. The anode according to claim 4, wherein
an average diameter of the projection ranges from about 1 μm to about 20 μm .
6. The anode according to claim 2, wherein
30 the projection includes an element capable of being alloyed with the anode active material layer.

7. The anode according to claim 2, wherein
the projection includes at least one constituent selected from the group
consisting of copper (Cu), nickel (Ni), iron (Fe), aluminum (Al), indium (In), cobalt
(Co), manganese (Mn), zinc (Zn), silver (Ag), tin (Sn), germanium (Ge) and lead (Pb).

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8. The anode according to claim 2, wherein
the anode active material layer is alloyed with the projection in at least a
portion of an interface with the projection.

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9. A battery, comprising:

a cathode;

an anode; and

an electrolyte,

wherein the anode includes an anode current collector having a projection, and
15 an anode active material being disposed on the anode current collector, and being
alloyed with the anode current collector in at least a portion of an interface with the
anode current collector, and including at least one kind selected from the group
consisting of silicon (Si) and silicon compounds.

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10. A battery, comprising:

a cathode;

an anode; and

an electrolyte,

wherein the anode includes an anode current collector having a projection, and
25 an anode active material layer being formed on the anode current collector
through at least one method selected from the group consisting of a vapor deposition
method, a liquid-phase deposition method and a sintering method, and including at
least one type of material selected from the group consisting of silicon (Si) and silicon
compounds.

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11. The battery according to claim 10, wherein
the anode active material layer is alloyed with the anode current collector in at
least one portion of an interface with the anode current collector.
- 5 12. The battery according to claim 10, wherein
the anode current collector is formed through forming a projection in a particle
shape on a substrate.
- 10 13. The battery according to claim 12, wherein
the average diameter of the projection ranges from about 1 μm to about 20 μm .
14. The battery according to claim 10, wherein
the projection includes an element capable of being alloyed with the anode
active material layer.
- 15 15. The battery according to claim 10, wherein
the projection includes at least one constituent selected from the group
consisting of copper (Cu), nickel (Ni), iron (Fe), aluminum (Al), indium (In), cobalt
(Co), manganese (Mn), zinc (Zn), silver (Ag), tin (Sn), germanium (Ge) and lead (Pb).
- 20 16. The battery according to claim 10, wherein
the anode active material layer is alloyed with the projection in at least a
portion of an interface with the projection.
- 25 17. The battery according to claim 10, wherein
the electrolyte includes a retaining body, a solvent and an electrolyte salt.
- 30 18. The battery according to claim 10, further comprising:
a film-shaped package part for containing the cathode, the anode and the
electrolyte therein.

19. The battery according to claim 10, wherein the cathode includes a lithium-containing metal composite oxide.